RICH Simulation

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MIPP Simulation

• Data-driven GEANT

• Three libraries

1. /trim_d0lib: RUN I D0library

2. /dd_geant: data-driven code, experiment independent

3. /e907mc: E907 specific RCP files and rountines

• Geometry and detectors systems are fed using RCP files

- **RCP files**

- Input data to programs (w/o common blocks)

- One xxx.rcp for each detector

- Each detector RCP file much have

    ROTATION_MATRICES

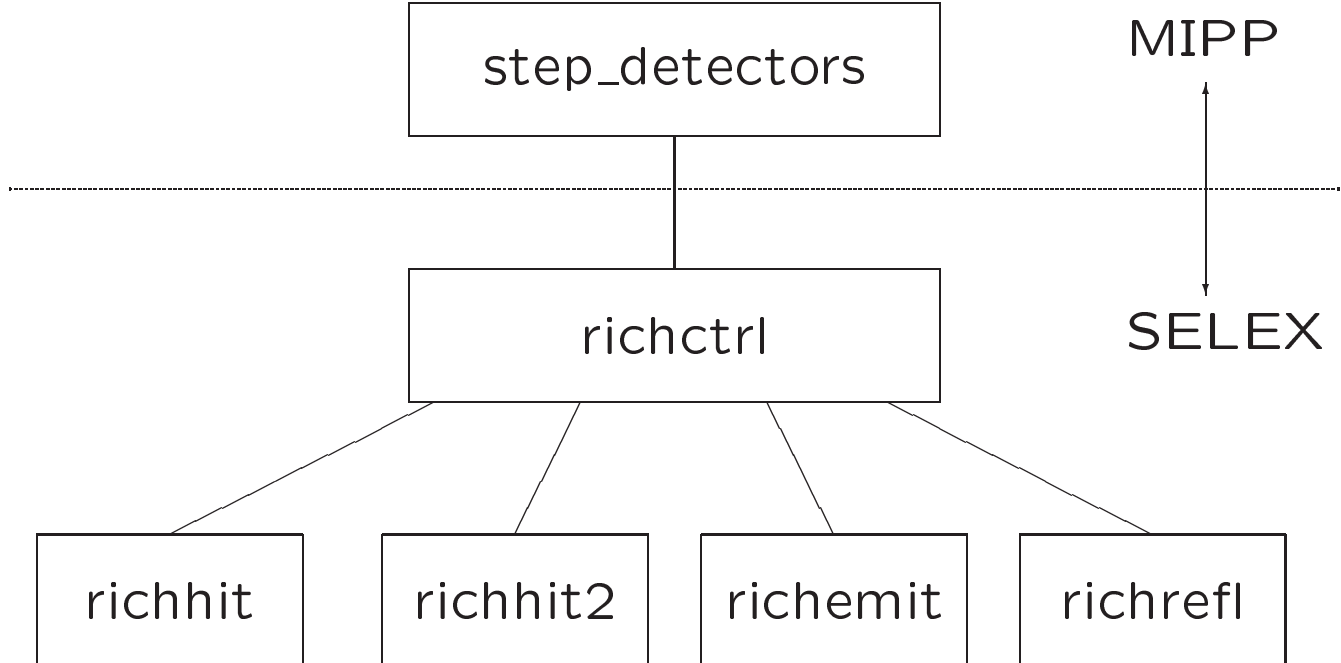   MATERIAL_LIST

    MIXTURE_LIST

    MEDIA_LIST

    VOLUME_LIST

    DETECTOR_LIST

RICH

- Previously only geometry in rich.rcp

- Arrays added for hits

  - DETECTOR_LIST

    Hits definition

    Arguments for GSDET, GSDETH

  - RICHMRS_RSmin

    Minimal segment sphere radius

  - RICHEML

    Emitton limits

  - RICHNDX

    Factors of Power

  - RICHABS

    Function of absorption

  - RICHRFM

    Function of reflection from mirror

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        ┌──────────────────┐                    MIPP
        │  step_detectors  │                     ↑
        └──────────────────┘                     │
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              │                                  │
        ┌──────────────────┐                     │
        │     richctrl     │                  SELEX
        └──────────────────┘
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┌────────┐ ┌────────┐ ┌──────────┐ ┌──────────┐
│ richhit│ │richhit2│ │ richemit │ │ richrefl │
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richhit: hits from geantinos (used to simulate
Cherenkov photons)
- Hits in the phototube box
- Digitization of the rings

richhit2: hits produced by charged particles
entering sensitive volume through the front flange
- Compare with results of RICH reconstruction
  data

richemit: emit cherenkov photons (geantinos)
from charged particles in RICH gaseous
radiator (CO_2)

richrefl: geantino stopping (opaque absorption)
and reflection
- Find exact point of intersection with mirror
- Calculate direction of reflected geantino

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Problem

MAJOR: GSAHIT Overflow

MINORS:

1. *gmake lib*

   - 1st time: build the correct Makefile

   - 2nd time: build the libraries

2. Does not build trim_d0lib/event_util

3. Two GEANT libraries
/afs/fnal.gov/ups/geant/v3_21_13/IRIX+6.5/src/geant321
/mipp/simulation/trim_d0lib/inc

Next Step

Digitalization: richdgi, richdgo (SELEX)